

# **APPRENTICESHIP AND OCCUPATIONAL CERTIFICATION**



## **ESSENTIAL SKILLS ASSESSMENT STUDY GUIDE**

**FOR ESA 10-0**

**November 2010**

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## About the Essential Skills Assessment

These assessments have been developed to identify whether essential skills training is required in order to be successful as an Apprentice or as a challenger of the Certification Examination.

The skills that will be tested in these assessments are: Reading Comprehension (Literacy) and Mathematics (Numeracy). These are the skills that have been identified as being essential in achieving a successful career in an Apprenticeship trade.

Remediation studies may be recommended to candidates where a weakness has been identified.

To write the Essential Skills Assessment, please contact the nearest Apprenticeship and Occupational Certification office (a list can be found on page 17).

## ESA 10-0 Occupations

Appliance Service Technician	Ironworker (Structural/Ornamental)
Automotive Painter	Landscape-Horticulturist
Automotive Repairer	Lather (Interior Systems Mechanic)
Automotive Service Technician	Locksmith
Automotive Service Technician (SS&B)	Machinist
Baker	Mobile Crane Operator
Blaster	Mobile Hoisting Equipment Operator
Bricklayer	Motor Vehicle Body Repairer (Metal & Paint)
Cabinetmaker	Motorcycle Mechanic
Carpenter	Oil Burner Mechanic
Commercial Trailer Technician	Painter and Decorator
Computerized Numerical Controls Machinist	Partsperson
Concrete Finisher	Plumber
Construction Boilermaker	Recreation Vehicle Service Technician
Cook	Refrigeration and Air Conditioning Mechanic
Distribution System Operator	River Control Operator
Electrical Mechanic (Electric Utility)	Roofer
Electric Motor System Technician	Sheet Metal Worker
Electronics Technician (Consumer Products)	Small Equipment Mechanic
Engineering Assistant	Sprinkler System Installer
Farm Equipment Service Technician	Staker/Detailer
Floorcovering Installer	Steamfitter/Pipefitter
Glazier	Steel Fabricator
Hairstylist	Switchboard Operator
Heat Treatment Technician	Tilesetter
Heavy Equipment Operator	Tool and Die Maker
Heavy Equipment Service Technician	Transport Refrigeration Service Technician
Industrial Mechanic (Millwright)	Truck and Transport Service Technician
Insulator (Heat and Frost)	Underground Hardrock Miner
Ironworker (Generalist)	Water Well Driller
Ironworker (Reinforcing)	Welder

## **How can the study guide help to prepare for the Assessment?**

Writers of the Essential Skills Assessment may have been out of school for several years. This guide will provide examples of the types of questions that will be on the assessment; this may help identify areas where preparation may be required. It can help refresh the knowledge that will be required for the assessment, and also improve your study and assessment writing skills.

If additional help is required contact your local Apprenticeship and Occupational Certification office for further information.

## **About the study guide**

This study guide includes:

- sample questions;
- an answer key for the questions included in the study guide;
- study and assessment writing tips;
- copy of the formula and metric conversion charts used with the Essential Skills Assessment;
- a sample of diagrams that include some typical diagrams used for the Essential Skills Assessment.

## Using the study guide

There are 24 sample questions included in this guide. Each one covers knowledge identified as essential to achieving success throughout apprenticeship.

Preparing for the assessment:

1. Read each question in the study guide carefully to get an idea of the level of difficulty and the knowledge you will be tested on. This will help to focus your studying on the areas that need the most work.
2. Assessment writing takes planning to ensure there is enough time to answer all the questions on the assessment to the best of your ability. These sample questions can help in determining how much time it will take to complete individual questions when writing the assessment. Practice reading over and recognizing the questions that will take more or less time to answer.
3. Look over the diagrams and formulas that are used in the questions. Interpreting what is shown in the diagram is very important. Often, the questions that relate to diagrams will require some interpretation and reasoning.
4. Practicing with the formula and conversion charts is also important. Formula sheets and conversion charts to use during your assessment will be provided

## Examination Instructions

These instructions are included in the Essential Skills Assessment booklet:

### DEPARTMENT OF POST-SECONDARY EDUCATION, TRAINING AND LABOUR APPRENTICESHIP AND OCCUPATIONAL CERTIFICATION BRANCH

#### INSTRUCTIONS

1. The time limit for this examination is 3 hours.
2. Do **not** write in this booklet.
3. All questions are of the multiple-choice type. Read each question very carefully.
4. Your choice of answer for each question is to be indicated on the separate score sheet provided.
5. Indicate your answer by filling in the bubble over the appropriate letter (A, B, C, or D) for each multiple-choice question, using a soft lead pencil.
6. The pass mark for this examination is 70%.
7. Below is a sample question:
  1. What is the capital city of the Province of New Brunswick?
    - A. Moncton.
    - B. Fredericton.
    - C. Saint John.
    - D. Bathurst.

(On Score Sheet)

1.	A	<input checked="" type="radio"/>	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
8. A formula and metric conversion sheet can be found at the back of this examination.
9. Scientific calculators are permitted when writing an examination.
10. Programmable or trade specific calculators, cellular phones, wireless communication devices, personal data assistants, cameras and all other electronic equipment that can store or transmit data are prohibited when writing an examination.

## **SECTION 01:      Reading Comprehension**

### **Studying for the Reading Comprehension section of the Essential Skills Assessment.**

Assessments include a section on Reading Comprehension. These questions are designed to challenge the candidate's ability to read and interpret written materials.

The following are examples of the types of questions from the Reading Comprehension section of the Essential Skills Assessment.

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**CAREFULLY READ THE FOLLOWING PARAGRAPHS AND ANSWER QUESTIONS 1 TO 3.**

### **Multiple Choice Exam Writing Strategies**

#### **Watch Your Time**

Each item on the assessment is worth one point. Do the easy questions or section first – this is helpful for calming nerves and establishing your concentration. You may want to note where you are in the assessment after one hour or two hours to ensure you are not falling behind. As mentioned previously, a 3-hour time limit is allowed.

#### **Process the Question**

Careless mistakes are often made when students rush through the “stem” of the question, missing important information. Read the question carefully, noting key terms. Watch for negative or positive phrasing, or qualifying words like “always” or “never” which can drastically change the meaning of a statement. If you do not understand the stem, ask the assessment supervisor for clarification. Before you look at the list of possible responses, try to recall the answer on your own. Then look at the alternatives to see which one best matches your answer. As you read through the possible responses, make a mental note of the ones you know are wrong. This will mean less reading time if you have to come back to the question later. If none of the selections seems close, re-read the question and try to determine what you missed. If you still cannot get it, go on. Something in another question may trigger your memory so you can recall the answer later.

1. What is a recommended strategy for ensuring you have enough time to complete the assessment?
  - A. Read each question quickly trying to get a sense of what is being asked.
  - B. Estimate how far you should progress through the assessment for each hour and mark on your notepaper.
  - C. Ask the assessment supervisor to give you a reminder when each hour has passed.
  - D. As you read through the possible responses, make a mental note of the ones you know are wrong.
  
2. How should you work through a question that appears to have more than one correct answer?
  - A. Ask for assistance from someone around you.
  - B. Guess since it is only one question.
  - C. If you are not sure always choose option "D".
  - D. Start by eliminating the answers you know are wrong.
  
3. Why is it important to read through the "stem" carefully when answering the question?
  - A. There may be words like "always" and "never" that drastically change the meaning of the statement.
  - B. It may be possible to answer the question on your own before looking at the list of possible responses.
  - C. You may be able to trigger something in your memory that will help with an earlier question you were not able to answer.
  - D. You will get a better sense of how long it is going to take to write the assessment and be able to judge more accurately if you still have enough time.



**SECTION 02: Mathematics**

**Studying for the Mathematics section of the Essential Skills Assessment.**

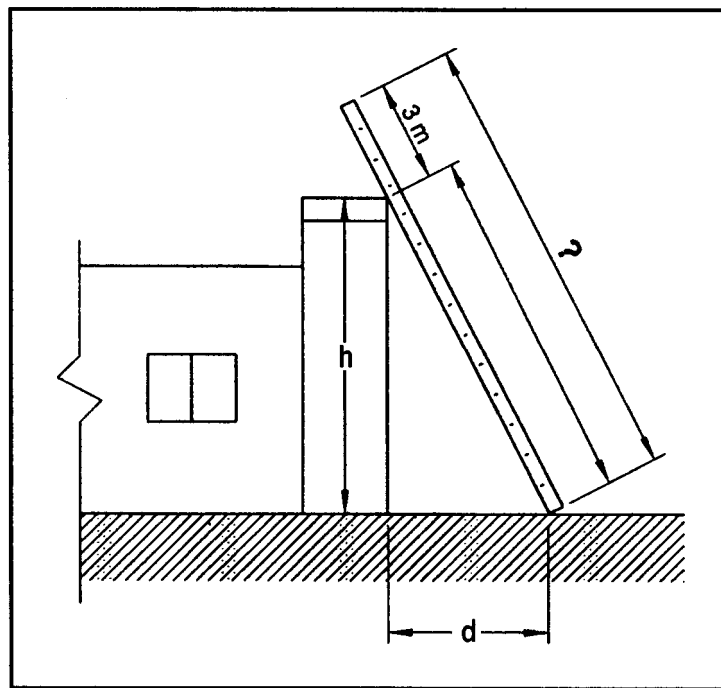
This Essential Skills Assessment includes a section for Mathematics questions. The questions are designed to challenge the candidate's ability to perform basic calculations, manipulate basic equations and use formulas. The types of questions asked and the difficulty will vary.

The following are examples of the types of questions from the Mathematics section of the Essential Skills Assessment.

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4. Refer to Figure 1. To ensure safe climbing practice, the base of a straight ladder should be 1 m out for every 4 m of height to the point of support. If  $h = 8$  m, what is the value of  $d$ ?

- A. 2 m
- B. 2.5 m
- C. 3.2 m
- D. 4 m



**Figure 1**

5. Solve.  $11 \times 6 + 7 \times 4$
- A. 94
  - B. 101
  - C. 292
  - D. 572
6. Which is the smallest number?
- A. 0.01001
  - B. 0.00998
  - C. 0.00385
  - D. 0.00297
7. Solve.  $-23.7 + 88 - 56 + 407.9$
- A. 202.9
  - B. 287.6
  - C. 416.2
  - D. 463.6
8. Solve.  $7 \text{ ft. } 4 \text{ in.} + 10 \text{ ft. } 9 \text{ in.}$
- A. 183 in.
  - B. 197 in.
  - C. 203 in.
  - D. 217 in.
9. If 5 L of paint covers  $20 \text{ m}^2$ , how many litres are required to cover  $400 \text{ m}^2$ ?
- A. 40 L
  - B. 52 L
  - C. 80 L
  - D. 100 L

10. Solve.  $\frac{3}{8} + \frac{3}{4}$
- A.  $\frac{9}{32}$
  - B.  $\frac{1}{2}$
  - C.  $1 \frac{1}{8}$
  - D.  $1 \frac{1}{4}$
11. A piece of sheet metal is  $28 \frac{1}{2}$  in. wide. A piece  $13 \frac{5}{16}$  in. is cut off. How wide is the remaining piece of sheet metal?
- A.  $14 \frac{1}{4}$  in.
  - B.  $15 \frac{3}{16}$  in.
  - C.  $15 \frac{13}{16}$  in.
  - D.  $16 \frac{1}{4}$  in.
12. When 2.49 is multiplied by 0.17, what would be the result? (Round off to 2 decimal places.)
- A. 0.04
  - B. 0.42
  - C. 4.23
  - D. 42.33
13. Subtract 64.85 from 209.11.
- A. 44.260
  - B. 144.260
  - C. 202.625
  - D. 273.960

14. Express  $\frac{3}{8}$  as a decimal.
- A. 0.240
  - B. 0.267
  - C. 0.375
  - D. 2.667
15. Solve.  $8^2$
- A. 10
  - B. 16
  - C. 64
  - D. 82
16. What is the area of a circle with a diameter of 240 mm?
- A.  $75.36 \text{ cm}^2$
  - B.  $150.72 \text{ cm}^2$
  - C.  $452.16 \text{ cm}^2$
  - D.  $1\,808.64 \text{ cm}^2$
17. A corner grocery store sold 14 boxes of oranges. Each box contained 5 lb. of oranges. If the profit per box was \$1.85, what was the total profit?
- A. \$ 12.95
  - B. \$ 25.90
  - C. \$ 37.84
  - D. \$129.50

18. Barry has a job painting new houses. One week he worked the following hours:

Monday	7.5 hours
Tuesday	10.0 hours
Wednesday	6.0 hours
Thursday	12.0 hours
Friday	14.5 hours
Saturday	10.0 hours

What was the average number of hours Barry worked per day?

- A. 9.5  
B. 10.0  
C. 10.5  
D. 11.0
19. How many cubic metres of cement are required to cover a walkway 7 m long, 0.95 m wide, and 10 cm deep?
- A. 0.665  
B. 0.737  
C. 6.650  
D. 66.500
20. A rectangular school yard 280 m by 245 m is to be fenced. How many metres of fencing will be required to fence it completely?
- A. 525 m  
B. 705 m  
C. 770 m  
D. 1 050 m

21. If a contractor pays an average wage of \$20.00 per hour and wants to make a 15% mark-up on the cost of labour, what will the contractor charge as an average labour cost on contracts?

- A. \$20.30
- B. \$21.50
- C. \$23.00
- D. \$26.00

22. What is the circumference of a circle with a diameter of 50 mm?

- A. 78.5 mm
- B. 157.0 mm
- C. 78.5 cm
- D. 157.0 cm

23. Solve:  $\frac{5}{8} \div \frac{1}{2}$

- A.  $\frac{3}{16}$
- B.  $\frac{1}{4}$
- C.  $\frac{3}{8}$
- D.  $1 \frac{1}{4}$

24. What is the radius of a circle with a diameter of 240 mm?

- A. 12.00 mm
- B. 76.43 mm
- C. 120.00 mm
- D. 480.00 mm

## Mathematical Formulas

These formulas are included in the Essential Skills Assessment booklet.

### Formulas

$$\pi = 3.14$$

$$\text{Circumference of a circle} = \pi D$$

$$\text{Area of a rectangle} = \text{length} \times \text{width}$$

$$\text{Area of a circle} = \pi r^2$$

$$\text{Area of a triangle} = \frac{\text{Altitude} \times \text{base}}{2}$$

$$\text{Volume of a cylinder} = \pi r^2 h$$

$$\text{Volume of a cube} = \text{length} \times \text{width} \times \text{height}$$

### METRIC CONVERSIONS

#### Distance

Metric		Imperial
2.540 centimetres	=	1 inch
0.3048 metre	=	1 foot
0.9144 metre	=	1 yard
5.029 metres	=	1 rod
1.609 kilometres	=	1 mile

Metric		Imperial
1 centimetre	=	0.3937 inch
1 metre	=	3.281 feet
1 metre	=	1.094 yards
1 metre	=	0.20 rods
1 kilometre	=	0.6214 mile

## METRIC CONVERSIONS (cont'd)

### Capacity

<b>Metric</b>		<b>Imperial</b>		<b>U.S.</b>
0.568 litres	=	1 pint	0.473 litre =	1 pint (U.S.)
4.546 litres	=	1 gallon	0.946 litre =	1 quart (U.S)
36.369 litres	=	1 bushel	3.785 litres =	1 gallon (U.S)
28.41 ml	=	1 fluid oz.	158.99 litres =	1 barrel oil
1.137 litres	=	1 quart	227.00 ml =	1 cup/8 fl. oz.

<b>Metric</b>		<b>Imperial</b>
1 litre	=	1.76 pints
1 litre	=	0.220 gallon
1 litre	=	.88 quart
14.21 ml	=	1 tablespoon
4.74 ml	=	1 teaspoon

### Weight

<b>Metric</b>		<b>Imperial</b>
31.103 grams	=	1 ounce (troy)
28.350 grams	=	1 ounce (avoir)
373.242 grams	=	1 pound (troy)
453.592 grams	=	1 pound (avoir)
453.592 grams	=	1 ton (short)
0.907 tonne*	=	2 000 lb
1 gram	=	0.032 ounce (troy)
1 gram	=	0.035 ounce (avoir)
1 kilogram	=	2.679 pounds (troy)
1 kilogram	=	2.205 pounds (avoir)
1 tonne	=	1.102 ton (short)

\*1 tonne = 1 000 kilograms



## **Apprenticeship and Occupational Certification - Office Locations**

### **Bathurst**

CCNB – Bathurst  
95 Youghall Drive, P.O. Box 266  
Bathurst NB E2A 3Z2  
**Tel: (506) 547-2711**  
Fax: (506) 549-5277

### **Miramichi**

NBCC- Miramichi  
80 University Avenue, PO Box 1053  
Miramichi NB E1N 3W4  
**Tel: (506) 778-6057**  
Fax: (506) 778-5259

### **Campbellton**

CCNB – Campbellton  
P.O. Box 309, Village Street  
Campbellton NB E3N 3G7  
**Tel: (506) 789-2402**  
Fax: (506) 789-2433 (College)

### **Moncton**

NBCC - Moncton  
1234 Mountain Road  
Moncton NB E1C 8H9  
**Tel: (506) 856-2236**  
Fax: (506) 856-2844

### **Edmundston**

CCNB – Edmundston  
225 Power Road  
P.O. Box 70  
Edmundston NB E3V 3K7  
**Tel: (506) 735-2501**  
Fax: (506) 735-2635

### **Saint John**

Apprenticeship and Occupational  
Certification  
8 Castle Street, 3<sup>rd</sup> Floor  
PO Box 5001  
Saint John NB E2L 4Y9  
**Tel: (506) 658-2133**  
Fax: (506) 643-2938

### **Fredericton**

Apprenticeship and Occupational  
Certification  
500 Beaverbrook Court, 1<sup>st</sup> Floor  
Fredericton NB E3B 5H1  
**Tel: (506) 453-2276**  
Fax: (506) 444-4327

### **Woodstock**

NBCC - Woodstock  
100 Broadway Street  
Woodstock NB E7M 5C5  
**Tel: (506) 325-4855**  
Fax: (506) 325-4545 (College)

St. Andrews	<b>(506) 658-2133</b>
Péninsule Acadienne	<b>(506) 778-6057</b>
Sussex	<b>(506) 658-2133</b>
Toll Free	<b>1-877-453-3030</b>

## Answer Key

Question	Response
1	B
2	D
3	A
4	A
5	A
6	D
7	C
8	D
9	D
10	C
11	B
12	B
13	B
14	C
15	C
16	C
17	B
18	B
19	A
20	D
21	C
22	B
23	D
24	C